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Historical Archaeology at Ephrata Cloister

A Report on 1996 Investigations

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PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

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Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Harrisburg, 1997

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The Ephrata Cloister Archaeology Project is structured as an archaeological field school for college-age students. Without students who seek and pay for hands-on training which can only be obtained outside of the classroom, the program would fail. Thanks to Patricia Kubala, Angie Garrison, Jennifer (Perky) Beisel, Courtney Birkett, Phil Wert, Bill Stalter, Brad Burkholder, Chris Zander, and Jesse Kulp for a job well done and a memorable summer.

Each year the excavation team is augmented by paid crew members, all of whom excelled as former field school students. Thanks to Lisa Lauria (Field Director and Teaching Assistant), Pat Gibble (Lab Director), Kristin Montaperto, Angela Shuck, Mike Middleton, and Bill Carter for their skillful assistance and good company. I am particularly indebted to Mike Middleton for recognition and interpretation of the Feature 60 tree-fall. Lisa Lauria and Kristin Montaperto undertook a final inventory of the 1996 artifact assemblage in The State Museum's Archaeology Section laboratory and prepared artifacts for long-term curation.

I would be remiss if I did not credit the sixty-four volunteers who freely gave a total of 1446 hours to assist with field excavation and lab work during a six week period of the project. Too numerous to individually mention, their efforts made it possible to excavate sixty-five test pits as well as clean and mark thousands of recovered artifacts in the field lab. Furthermore their enthusiasm and curiosity were infectious. Many thanks for your help!

Finally, I recognize Lisa Lauria for her skill in applying computer aided drafting (CAD) to produce the plans and profiles used in this report. I also thank Lisa Lauria, Kristin Montaperto, Angela Shuck, Janet Johnson, and William Sisson for reviewing a draft version of this booklet. Their constructive comments were most helpful. I, of course, assume full responsibility for any errors which might appear in graphics, text, or interpretation offered herein.

Stephen G. Warfel
May 30, 1997

Introduction

By definition, Historical Archaeology is a specialized branch of American archaeology that uses archaeological methods to study human cultures for which written records exist. Hence, archaeologists investigating a historic period site must research and become familiar with available documentary evidence as well as artifacts and man-made disturbances found below the ground. Information obtained from these two independent sources is compared, contrasted, and synthesized to interpret past activities and events. Often one body of evidence outweighs the other. Perhaps the subject culture or society was under-registered – it was not in the mainstream of society nor did it have sufficient political or social standing to be considered worthy of full recordation. Alternately, the material remains of a past society may not have survived due to disturbance or poor preservation.

Even though the historic Ephrata Cloister community, founded in 1732, intentionally sought to isolate itself from British-American colonial culture, it is surprisingly well-documented because of the peculiar lifeways practiced there. Travelers, learning of these oddities, frequently visited the commune and recorded their experiences and observations (see Reichmann and Doll 1953). For scholars, the greatest obstacle preventing ready access to original documents produced by community members and foreign travelers is language. Numerous letters and manuscripts have not yet been translated from the archaic German style in which they were written. Another problem limiting the value of Ephrata documents is the ever-persistent emphasis on professed ideals of the religious community. Routine aspects of daily life are often understated, if not misrepresented or ignored. Consequently, exploration of the Cloister community's archaeological record, composed of daily refuse and structural remains buried below the earth's surface, holds tremendous promise for the discovery and construction of a more truthful, realistic interpretation of this early American religious commune, commemorated today as an example of William Penn's pledge to religious toleration throughout his New World colony.

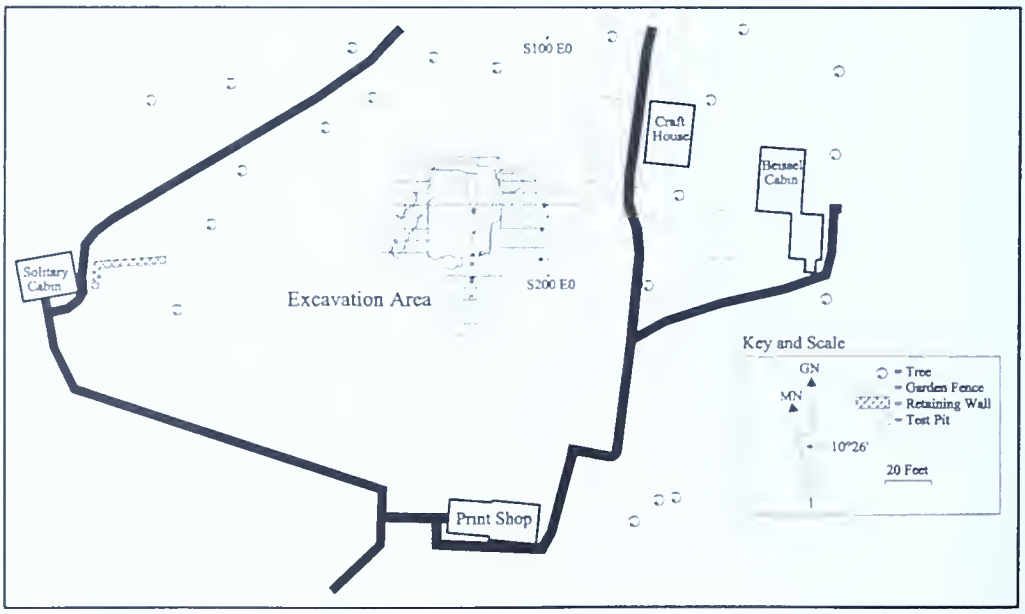

Figure 1. Partial site plan depicting location of 1996 excavation area, standing structures and 1994 and 1995 excavations blocks.

Since 1993, the Ephrata Cloister Archaeology Project has been searching for and collecting evidence of the historic communal society which formerly occupied Cloister grounds. Archaeological field schools, designed to train college students and supplemented by volunteers and paid staff, have identified areas of below-ground disturbance across the twenty-five acre property and begun to unearth previously undocumented evidence of the village's layout as well as artifacts reflecting solitary members' dietary, consumer, and social practices (see Warfel 1994, 1995, and 1996). Excavations conducted from June 3 through July 26, 1996 marked the third season of work in an area of Cloister property which lies north of the Print Shop and west of the Craft House (see Figure 1). There the remains of two early structures, represented by fragile, dry-laid limestone footings and postholes (holes dug to receive wooden posts upon which a building was constructed) were discovered in 1994 and partially exposed in 1995 and 1996. The following narrative describes objectives of the 1996 field season, methods employed, and its findings. Because remnants of the two structures under investigation were disturbed by tilling and have only been partially exposed, interpretations offered herein are subject to future revision as new evidence is discovered. Indeed, it is this dynamic nature of historical and archaeological research – the prospect of new discoveries and revised interpretations – which makes each so exciting.

Objectives

Because the 1996 field season continued investigations initiated and undertaken in the two preceding years, its goals were problem-oriented. Hand-dug excavation

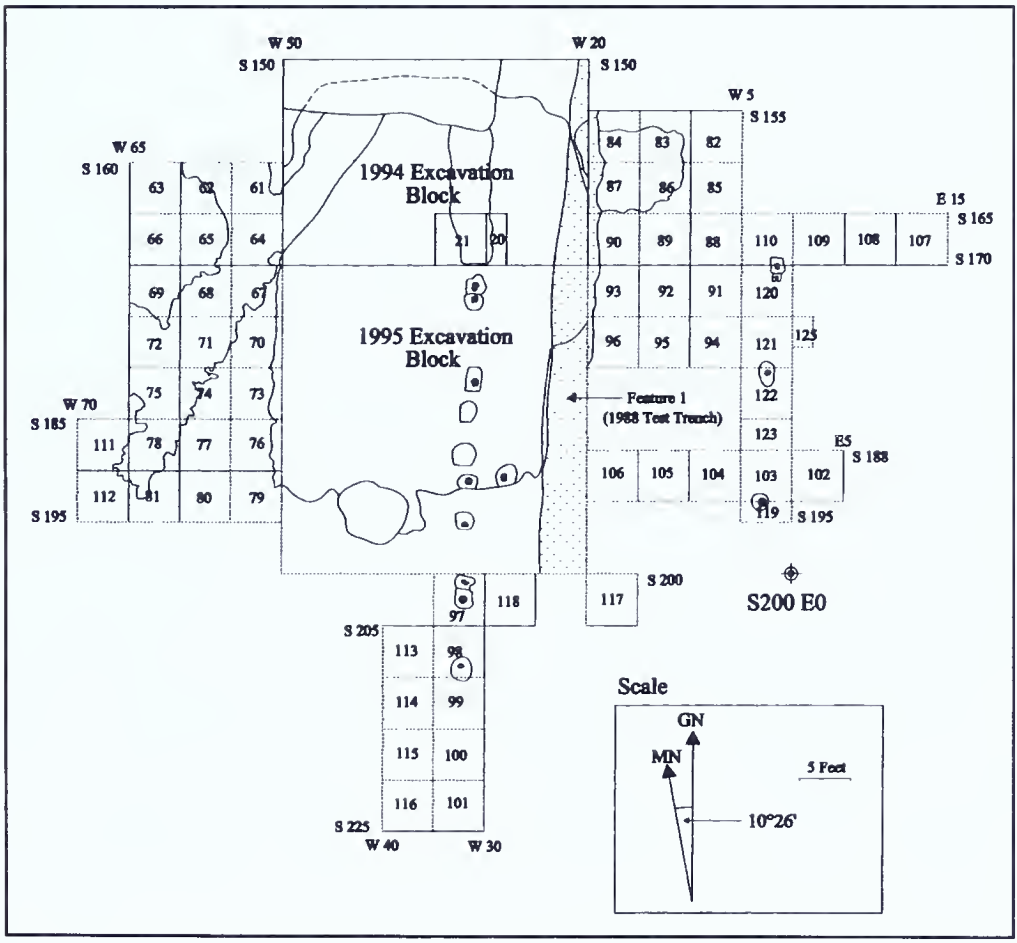

Figure 2. Location and numerical designation of 1996 test pits. (Test Pit 124 not shown.)

units or test pits were carefully placed to answer specific questions about the two structures and a large refuse-filled clay borrow pit (a pit from which clay was dug for use in construction) over which they were constructed (see Figure 2). The westernmost building is hereafter referred to as "the diagonal structure" because of its orientation with respect to the excavation grid; whereas, the easternmost building is referred to as "the north/south structure" due to its orientation. Questions framed about each follow.

Clay borrow pit

1. How far does the western edge of the clay borrow pit extend beyond 1994 and 1995 excavation blocks?
2. Are previously observed fill layers (layers of refuse discarded to close a depression or open hole in the ground) present in the western portion of the pit, and, if so, do recovered datable artifacts support interpretations about when the fills were dumped into the pit?
3. How far does the eastern edge of the pit extend beyond the fire suppression systems trench (a recent utility trench) investigated in 1988 (see Warfel 1990)?

Diagonal structure

1. What is the length of the diagonal limestone footing, discovered and partially exposed in 1994?
2. Does it extend beyond the refuse-filled clay borrow pit?
3. Is it associated with artifacts which can be used to determine its date of construction and/or demolition?
4. Is it associated with a below-ground feature (natural or man-made soil disturbance) found in 1995 and interpreted to be a drain?
5. Does it have structural elements, such as partition walls or postholes, which indicate its internal configuration and/or function?
6. How large is the building?

North/South structure

1. How much farther does the wall line of postholes, discovered and partially exposed in 1995, extend south toward the Print Shop?
2. Where does the wall return to the east, forming an outside corner?
3. Where is the east wall of the building located?
4. Is the east wall of the building post-built or composed of stone footing and post-built elements as is the building's west wall?
5. Does the building have interior features, such as partition walls, fireplace, root cellar, etc., which indicate its configuration and/or function?
6. How large is the building?
7. Will removal of a portion of the west wall stone footing, discovered in 1994 and built over clay borrow pit refuse layers, expose additional fragments of a slip-decorated red earthenware dish bearing German script and a rare glass trumpet discovered in 1995 (see Warfel 1996: 12, 14-16)?

Because the answers to these questions were buried under a three - to ten-inch-thick package of plow zone soil (previously tilled topsoil), tremendous effort was required to remove and screen the artifact-rich soil layer before primary data collection began. The use of manual labor for this task in favor of mechanical soil removal was elected due to the location of stone footings at the base of the plow zone and the variable depth of plow zone soil in the project area. One mistaken cut with a machine blade would destroy fragile remnants of Cloister buildings and forever prevent discovery of an early part of the 18th century village. Furthermore, manual removal of plow zone soil develops, hones, and polishes student and volunteer observation skills before truly sensitive archaeological deposits are encountered. It must be emphasized that the Ephrata Cloister Archaeology Project is a training program. Students learning the methods of field excavation do not possess the advanced skills required to employ "short cut" procedures.

Methods of Investigation

Methods used during the 1996 excavation season were comparable to those employed the preceding year (sce Warfel 1996: 3-5). A grid, consisting of five-foot-square units and based on a line connecting coordinates S200 E0 and S100 E0, both permanently marked points in a site-wide grid established in 1993, was set along boundaries of the 1994 and 1995 excavation blocks (Figure 2). Sixty-five excavation units or test pits, numbered 61-125, were positioned to address specific questions and meet previously discussed objectives. Horizontal measurements of discovered objects and soil disturbances were made with reference to grid coordinates; the southwest grid coordinate of each square was selected as the designator for test pits. A bench mark of known elevation (315') was re-established on a concrete monument at S200 E0 and used as reference for vertical measurement of below-ground finds.

Turf was removed with sod shovels and carefully inspected for artifacts before placement on the spoil pile. Distinct soil layers were then scraped and removed with sharpened mason's trowels and miniature picks. Site Level 1 (modern top soil), 2/3 (a mid-20th century fill level which occurred only on the west side of the 1994 and 1995 excavation blocks), and 4 (a buried plow zone/original land surface), distinguished by color and texture, were independently excavated.

Soil layers and features discovered beneath the plow zone were defined, photographed, and mapped before excavation. Each was probed with a one-inch diameter soil auger to determine approximate depth. Where depth was assessed to be greater than three inches, three-inch wooden pegs were driven into the deposits and used to control removal of arbitrary excavation levels within naturally occurring layers. Excavation proceeded until

Figure 3. View of excavation balk covering stone footing in the West Excavation Block (facing North).

the pegs were completely exposed or the next visually and texturally distinct soil layer was defined. All artifacts recovered from such arbitrary levels were designated according to depth. For example, objects found in the first three inches of the first level of Feature 10 (the clay borrow pit) were labeled Feature 10, Level 1, 0"-3".

All soils were screened through 1/4" hardware cloth. Artifacts were collected by layer and/or feature within five-foot grid units. Plan view drawings were completed for each layer within each test pit. Section or profile drawings were completed for distinct features and all excavation block perimeters. Additionally, a three-foot-wide balk (unexcavated soil margin) was maintained and profiled at the S180-S183 grid lines west of the 1995 excavation block (Figure 3), providing a continuous profile of clay borrow pit fill soils begun the preceding summer. Before the field season concluded, the balk was excavated in the same manner as surrounding test units.

Flotation, a specialized technique employed to recover preserved botanical evidence, such as seeds and nuts, was not employed during the 1996 field season. Ample float samples were collected and processed during 1994 and 1995 excavations from the same project area. Although flotation analyses produced important information about the nature of fill soils present in the clay borrow pit, they also determined that fill soil composition did not promote botanical preservation (see Moeller 1996). Not a single historic seed nor nut was recovered during either the 1994 or 1995 excavation season!

Standard documentation included periodic photography using black-and-white and color transparency films, daily journals kept by the author and excavation crew members, and numerous specially-designed recording sheets, providing a permanent record of observations and site excavation.

Artifacts were cleaned, cataloged, and inventoried according to standard archaeological procedures. The artifact collection, field records, journals, and photographs are curated at The State Museum of Pennsylvania, Harrisburg, and are available for use by researchers upon written request.

Excavation Findings

The West Excavation Block

Test Pits 61-81, 111 and 112 composed the so-called West Excavation Block, designed to answer questions about the western perimeter of the Feature 10 clay borrow pit, its fill layers, and a diagonal limestone footing, partially exposed in 1994 (see Figure 4). Removal of Site Level 1 sod, a dark brown silt loam, revealed the presence of two modern fill layers, previously noted in 1994 and 1995 excavation blocks and designated Site Levels 2 and 3. Associated with the fill layers was an intrusive modern disturbance, labeled Feature 32. The fill layers and feature extended west and south to the W59 and S180 grid lines respectively. Consistent with previous analyses, artifacts recovered from the layers and Feature 32 indicate the deposits date to the middle of this century, after the Commonwealth assumed ownership of the Cloister property. Numerous structural materials, such as roofing paper, asphalt shingles, nails, plaster, and brick further verify the fill resulted from demolition of appendages to extant structures removed during restoration. The artifact rich layers (n=1,553 artifacts not including coal, cinder, slag, and charcoal) were excavated and screened as a single unit in order to reserve valuable investigation time for undisturbed 18th century deposits.

Beneath the fill layers, Site Level 4 plow zone, a two- to eight-inch-thick dark yellowish brown loam, blanketed the excavation block. The former land surface, which appears as a plowed field in pre-1941 Cloister photographs, contained 4,370 artifacts, including such diverse objects as prehistoric stone tools and 20th century plastic and tin foil. An additional 14,308 pieces of coal, cinder, slag, and wood charcoal, representing dumped furnace waste, were also found in the layer.

One disturbance, designated Feature 33, was discovered in Test Pits 68 and 71. An obvious postmold within a posthole, the feature cut through the plow zone and extended into soil layers below. Comparable in shape and size to two other postholes discovered in the 1995 excavation block (Features 12 and 13) and on the same alignment, the intrusion is understood to be the remnant of a Print Shop garden fence that once traversed the project area.

Removal of plow zone soil revealed a portion of the limestone footing; Feature 10, Level 1 fill; Feature 10, Level 1/2 Interface fill; and undisturbed subsoil (Site Level 5). Although the diagonal structure's limestone footing had been previously disturbed by plowing, its dimensions could still be identified and recorded (see Figure 4). The footing measures approximately 5-1/2' in width and is 43'10" long (including the section exposed in 1994). Much of the footing was masked by a veneer of Feature 10, Level 1 fill, a strong brown silt loam with reddish hues and fine gravel lenses. The fill was present in each test pit in the West Excavation Block. However, Feature 10, Level 1/2 Interface fill soil and undisturbed subsoil (Site Level 5) were also evident in Test Pits 76, 77, 79, and 80. The co-occurrence of these three soils at the same depth indicated that the edge of the clay borrow pit was nearby.

Excavation of Feature 10, Level 1 fill in three-inch increments revealed two curious appendages on the west side of the footing which may represent the location of interior partition walls (see Figure 4). Both consist of identical tabular limestone pieces and are integrated with the primary footing. Interestingly, Feature 10, Level 1 fill was thickest (6"-7") in those test pits located between the partition footings, signifying that a depression existed there before the footing was covered.

Unexplainably, the southern end of the stone footing terminated without a return required to define an outside corner. The shallow footing either had been removed by plowing (numerous plow scars were recorded throughout the West Excavation Block) or, alternately, an intentional void

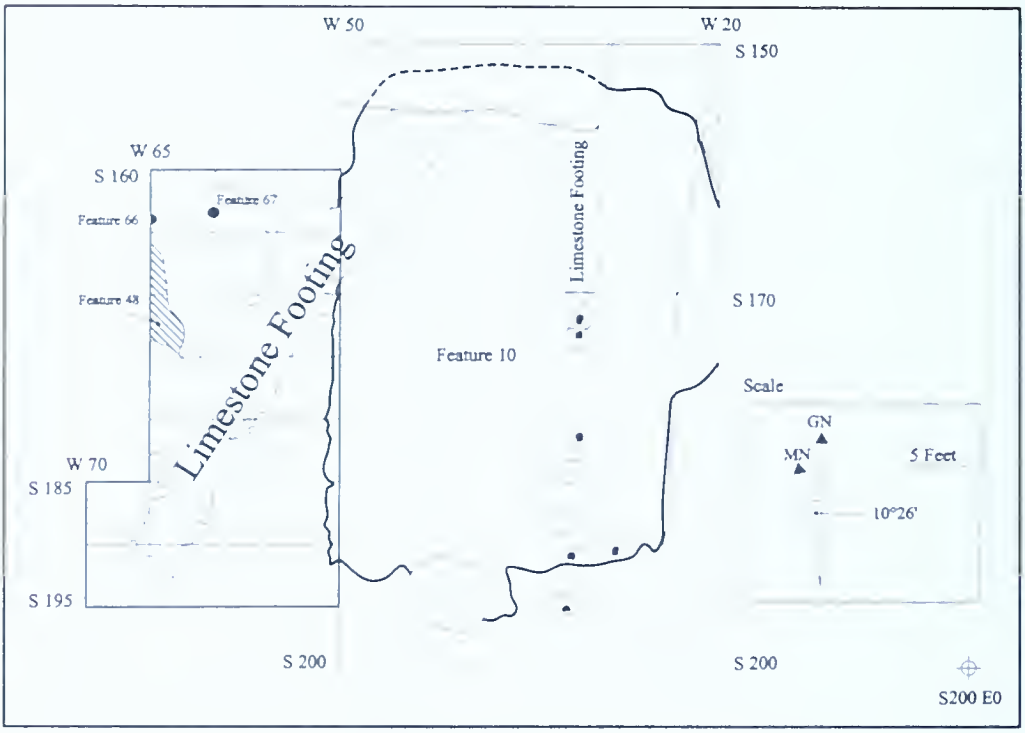

Figure 4. Plan of West Excavation Block (bold outline, left) with respect to 1994 and 1995 excavation blocks.

was created during construction for an undetermined purpose. Analysis of the 1,551 artifacts recovered from Feature 10, Level 1 soils indicates that 76.27% of the assemblage consists of structural debris, including brick fragments, clay roofing tile pieces, and wrought nails. Kitchen wares, such as ceramic bowl and dish sherds and bottle and vessel glass pieces, account for only 6.51% of the assemblage. Too few datable ceramic types were recovered to calculate a reliable Mean Ceramic Date (an average date of an archaeological site, feature, soil layer, etc., based on the quantity of distinctive ceramic types and their median dates—the midpoints between when wares were introduced and taken out of production). The inclusion of creamware and plain pearlware, both ceramic types dating to the late 18th century, however, indicates that Feature 10, Level 1 fill was not placed over the footing until the close of the 18th century or later. This finding is consistent with conclusions drawn from the analysis of Feature 10, Level 1 soils excavated in 1995 (see Warfel 1996: 9).

Also noteworthy was the recovery of 101 pieces of dietary animal bone and 25 prehistoric stone artifacts from the fill. The animal bone further demonstrates that the Cloister diet was not strictly vegetarian as reported by some historians. On the other hand, the recovery of prehistoric flakes produced by Native Americans making and maintaining stone tools, one stone spear tip, and a stone cutting tool attest the fill layer did not develop in place–that is, the layer of soil and the artifacts contained within it were obtained from elsewhere on the Cloister property, possibly nearby, and used to cover the footing after the diagonal structure was razed.

Feature 10, Level 1/2 Interface fill was encountered under Feature 10, Level 1 soil and consisted of a mottled yellowish brown silt loam, varying in thickness from three to six inches (see Figure 5). Importantly, a cross-section excavated through the stone footing determined that Level 1/2 Interface soil lies under the footing and therefore must have been deposited before the diagonal structure was built. Regrettably, and comparable to

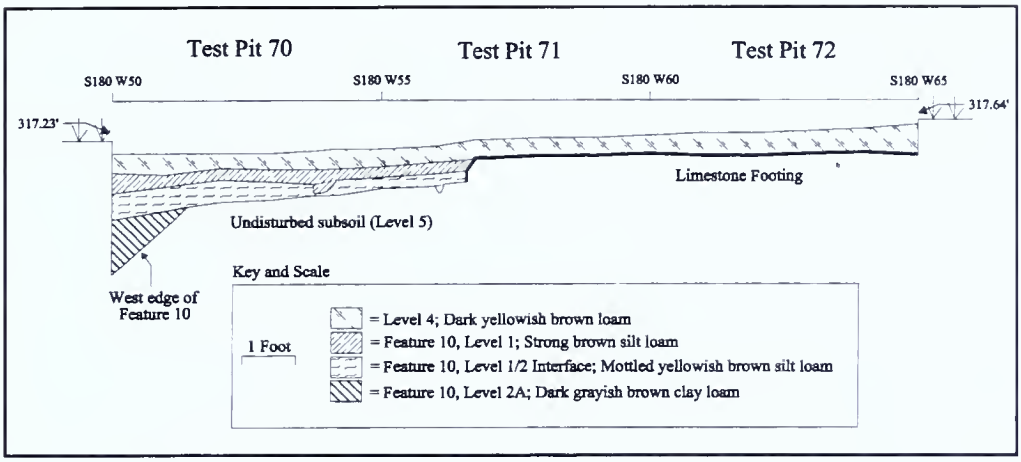

Figure 5. South profile of excavation balk at the S180 grid line.

1995 findings, no datable artifact types were recovered from the fill layer which can be used to assign a construction date to the ruins. The principal artifact types recovered from Level 1/2 Interface soil include: brick fragments (48.21%); plain/glazed red earthenware sherds (19.94%); and dietary animal bones (20.54%). Similar to Feature 10, Level 1, the fill layer also produced thirty-four prehistoric artifacts, including corner notched and straight-stemmed stone spear tips dating to the Archaic and Terminal Archaic Periods (ca. 3500-1800 B.C.).

Removal of Level 1/2 Interface soil revealed undisturbed subsoil as well as several features. The true western edge of the Feature 10 clay borrow pit was found within seven to twenty-two inches of the eastern edge of the West Excavation Block (see Figure 4). Only a section of the diagonal structure's footing was built over the in-filled pit. As illustrated in Figure 5, the western portion of the clay borrow pit was first filled with Feature 10, Level 2A soil, a dark grayish brown clay loam which lines its walls. One hundred and five artifacts were recovered from the layer. Brick fragments, window glass pieces, and wrought iron nails account for more than half (57.14%) of the assemblage. Plain/glazed and decorated red earthenware ceramics and bottle glass account for 20.95% of the total; and, dietary animal bone constitutes 5.71% of the artifacts found in the layer which is estimated to date to the early 1730s.

West of the footing several intriguing features were exposed or better defined after Level 1/2 Interface soil was removed. Feature 48 is an irregularly-shaped disturbance located along the western margin of the West Excavation Block in Test Pits 66 and 69 (see Figure 4). It contained two levels of fill, which, upon first inspection, appeared to be unique to the disturbance. Careful scraping of the West Excavation Block's west profile wall above the feature, however, determined the first level to consist of Feature 10, Level 1 soil. It was marked by notable reddish hues and gravel lenses. The second level was determined to consist of Level 1/2 Interface fill soil deposited before construction of the diagonal structure. Since Feature 48 was lined with Level 1/2 Interface soil, it must predate the diagonal structure. Its purpose, however, will not be known until more of the deposit is investigated.

Located nearby in Test Pits 63 and 62 respectively and also covered by Level 1/2 Interface soil are Features 66 and 67 (see Figure 4). Feature 66 is nine inches in diameter and twenty-eight inches deep. Feature 67 is ten inches in diameter and twenty-four inches deep. Nearly identical in shape, both are interpreted to be postholes. Like Feature 48, each predates the diagonal structure.

Finally, it is noteworthy that numerous gravel-filled channels were identified in the southern portion of the West Excavation Block. Similar to Feature 16,

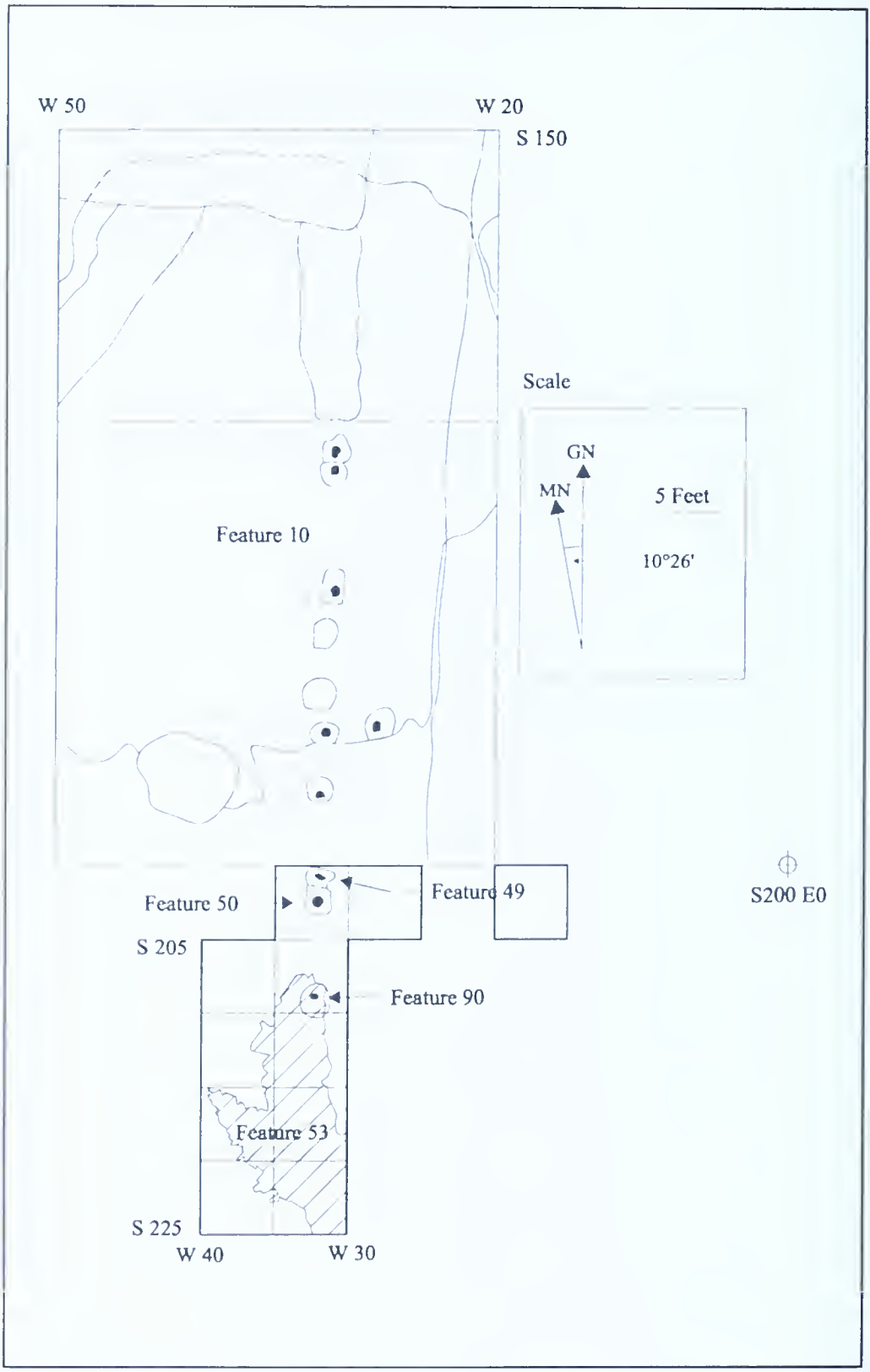

Figure 6. Plan of North-South Trench (bold outling) with respect to 1994 and 1995 excavation blocks.

Figure 7. Feature 53 stone concentration found in North-South Trench (facing North).

located in the adjoining 1995 excavation block, their quantity, irregular configuration, slope, occurrence in more than one fill layer, and position on both sides of the footing indicate they are natural erosion gullies, not intentionally-dug drains as initially interpreted (see Warfel 1996:7).

North-South Trench

The so-called North-South Trench consisted of Test Pits 97-101 and 113-116. Adjoining the southern edge of the 1995 excavation block, it was designed to locate additional posthole evidence of the north/south structure (see Figure 6). The structure was first discovered in 1994 and further defined in 1995 (see Warfel 1995, 1996). Curiously, its west wall was composed of both limestone footing and post-in-ground elements built over and into the Feature 10 clay borrow pit.

Removal of a two- to four-inch-thick dark yellowish brown sod layer exposed the dark yellowish brown, silt and clay loam plow zone. Artifacts found in the plow zone (n=1406, not including 696 pieces of coal and cinder furnace waste) principally represent 18th-20th century site habitation. Numerous fragments of prehistoric chipping debris, the by-product of Native American stone tool manufacture and maintenance, were also present in the assemblage.

Under the plow zone, several features appeared in the Level 5 subsoil. Perhaps the most intriguing and difficult to explain is Feature 53, a large tabular limestone concentration which covered most of Test Pits 98-100 and 114-115 (see Figure 7). Without question, the stone that makes up the mass is comparable in size to that found in the diagonal structure's limestone footing. Unlike the footing, however, Feature 53 does not have well-defined form or orientation. It is presently thought that the mass is nothing more than stone refuse, possibly resulting from demolition of the diagonal structure.

Three large postholes, labeled Features 49, 50, and 90 were discovered in Test

Pits 97 and 98 (see Figure 6). The true targets of the North-South Trench investigation, these three features lie in perfect alignment with others discovered in the 1995 excavation block. Each posthole contained a postmold, the relatively soft or loose organic remains of a wooden post, which averaged six to seven inches in diameter. Features 49 and 50 were adjoining and either mark a point where the north/south structure required additional support for framing or a location where a repair post was installed to bolster a failing structural member. Feature 49 extended ten inches into Level 5 subsoil; whereas, Feature 50 extended fifteen inches into undisturbed soil. Because the two postholes were not dug to the same depth, it is more likely they were installed at different times. Thus, the repair hypothesis is strengthened by noted characteristics of the two holes.

The Feature 90 posthole was partially obscured by the limestone concentration. Attention was drawn to the location because a slight depression appeared at the northern end of the limestone mass and a distinct stain was visible in the surrounding undisturbed soil. After the northern end of the limestone concentration was removed, the full outline of Feature 90 became distinct. Like nearby Feature 50, the Feature 90 posthole extended fifteen inches into the subsoil. A soft spot in the center of the posthole was interpreted to be a postmold, even though it was never visually distinct. The stratigraphic (layered) relationship of the posthole and overlying Feature 53 limestone concentration is significant. Because the limestone mass covered the posthole, it could not have been deposited until after the north/south structure, represented by the posthole, was demolished. This observed relationship also supports the previous inference that the stone represents discarded demolition debris rather than the remnant of another footing.

North/South Structure Stone Footing

During the 1995 field season, a most

Figure 8. North profile of north/south structure's stone footing. Plastic sheet coveringfooting marks limit of 1994 excavations; painted lines on grass mark footing orientation.

unusual artifact–a glass trumpet–was recovered from Level 2 of the Feature 10 clay borrow pit where the excavation block joins with the 1994 excavation block (see Warfel 1996: 13-16). Although broken in many places, nearly all of the trumpet was recovered except for the mouthpiece. The end of the straight tube into which the mouthpiece inserts, variously referred to as the first branch, first yard, or mouthyard (see Barclay 1992: 9), was literally retrieved from fill soil under a stone footing section associated with the north/south structure. Because the trumpet is such a rare find, but incomplete without a mouthpiece, the decision was made to remove the southern end of the footing and search for the missing piece. (Normally, original architectural fabric, such as the footing, is preserved in place.) The excavation also afforded another opportunity to recover additional pieces of a slip-decorated red earthenware dish with German script (see Warfel 1996: 10-12) and examine the fill layer sequence upon which the stone footing was constructed. It was also hoped that diagnostic artifacts required to assign a construction date to the north/south structure were present in the fills.

Test Pits 20 and 21 were located precisely over the southern end of the footing and excavated to the depth of undisturbed subsoil (see Figure 2). As illustrated in Figure 8, numerous fill layers were observed below the limestone footing. All were previously documented in the 1995 excavation block except for Feature 10, Level 1A. This fill layer, positioned immediately beneath the footing, consisted of a dark reddish brown clayey silt and was surprisingly similar to the Feature 10, Level 1 fill layer which covered the footing. Without question, the similarity is due to Level 1 soil filtering through the dry-laid tabular stone. Although 101 artifacts, including window glass pieces, brick fragments, wrought iron nails, plain/glazed red earthenware ceramic sherds, dietary animal bone, and a glass bottle fragment were found in the underlying soil layers, none were so distinctive as to permit assignment of a specific date to the footing's construction. Likewise, and with great disappointment, no trace of the missing mouthpiece nor additional sherds of the German script dish were found.

East-West Trench, the Craft House Trench, and the Connecting Trench

The East-West Trench consisted of Test Pits 102-106 and 119; the Craft House Trench consisted of Test Pits 107-110; and the Connecting Trench was made up of Test Pits 120-123 (see Figure 2). Since each of these test unit clusters was excavated for the same purpose–to locate additional posthole evidence of the north/south structure, they are discussed together. During the summer of 1995, a series of postholes was found intruding into the clay borrow pit's deepest fill layers (see Warfel 1996: 7). Because the posthole line is in alignment with a partial stone footing found the summer before, the footing and post line are interpreted to form a common west wall of a second structure built over the in-filled borrow pit and referred to as the north/south structure. One of the postholes, Feature 19, was located east of the line formed by the others (see Figure 9), suggesting evidence of a perpendicular wall might be found east of the 1995 excavation block. The East-West Trench was positioned to test this hypothesis.

Similar to the North-South Trench, the entire area east of the 1995 excavation block was marked by a simple soil profile. A three-inch sod layer overlaid a seven- to ten-inch plow zone, which, in turn, covered Site Level 5 subsoil. As observed elsewhere in the project area, the plow zone layer was artifact rich. One thousand five hundred and seventy-seven objects, representing prehistoric and 18th-20th century habitation, were recovered. The historic period assemblage typically included: structural debris, such as window glass, brick fragments, mortar, and iron nails; ceramic vessel sherds; glass container and vessel pieces; dietary animal bone; and modern tin foil, cellophane, and styrofoam.

Numerous features and small postmolds were found in the subsoil floor of the East-West Trench. Most are attributed to natural and modern disturbances, such as

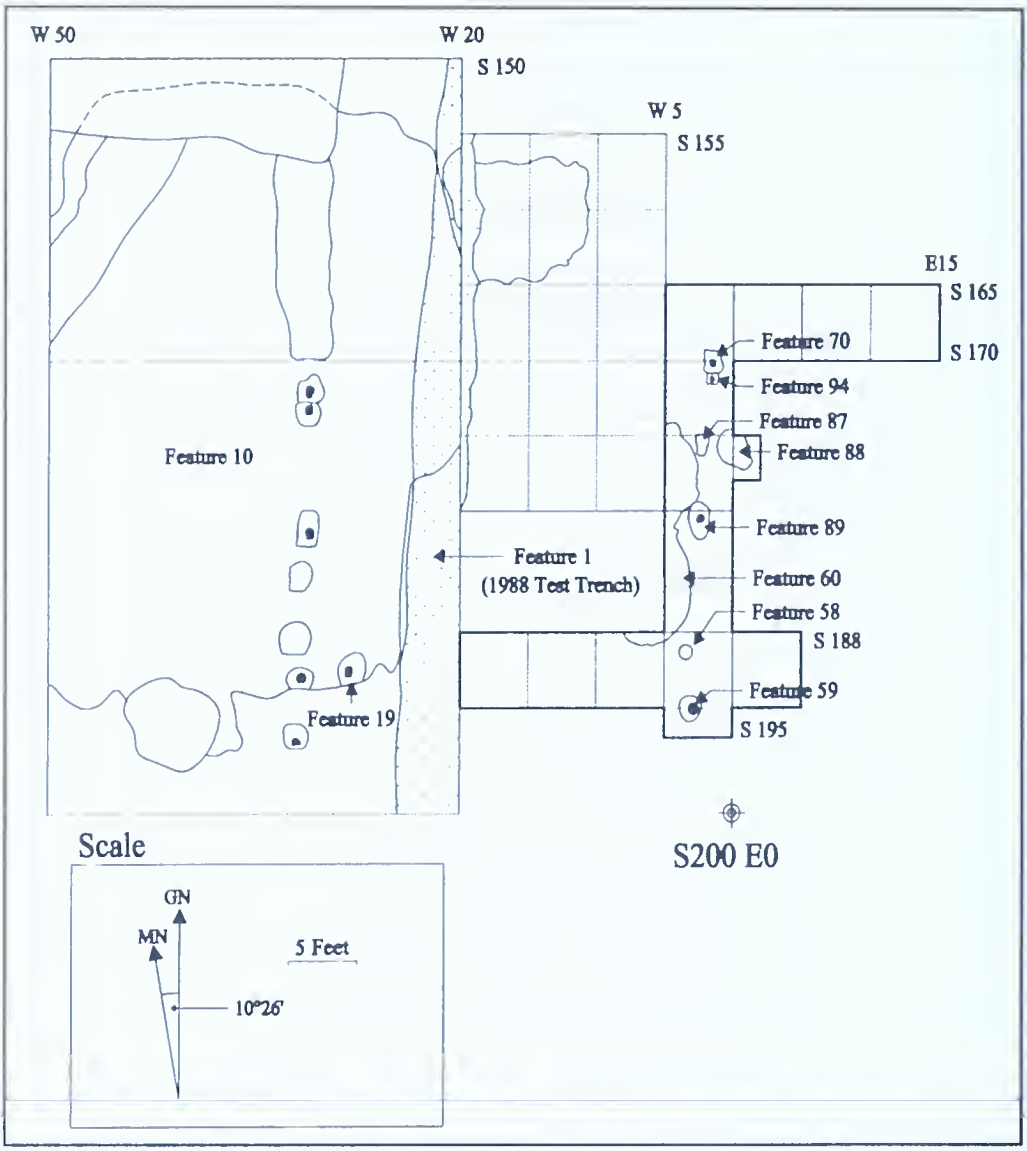

Figure 9. Plan of East-West, Connecting, and Craft House Trenches (bold outline) with respect to 1994 and 1995 excavation blocks and the East Excavation Block.

rodent burrows, plantings, and former Print Shop garden activities. Feature 59, however, located in Test Pits 103 and 119, was discovered to be a posthole (see Figure 9). Although not well-defined, a soft dark postmold was found in the feature's center which measured approximately eight inches in diameter and twelve inches deep. In all respects the posthole is comparable to those recorded in the 1995 excavation block. Its location on the S193 grid line (at least three feet south of the perpendicular line suggested by the Feature 19 posthole) and the lack of other structural evidence in the East-West Trench does not support the hypothesis of an intersecting wall at this location.

The only other noteworthy feature found in the trench is Feature 58, located in Test Pit 103 (see Figure 9). The twelve-inch diameter circular disturbance was only three inches deep and is not thought to be another posthole. Its function is unknown. The only datable artifact recovered from the pit is a sherd of plain white salt-glazed stoneware, a ceramic type first produced in 1720. Consequently, the feature is likely a

product of the site's 18th century habitation and may have been associated with occupation of the north/south structure.

The Craft House Trench also contained a variety of disturbances in its subsoil floor. The most interesting and germane to discovery of the unexposed north/south structure footprint was a distinct posthole with postmold on the southern margin of Test Pit 110 (see Figure 9). Labeled Feature 70, the posthole appears to be in approximate alignment with Feature 59 in Test Pits 103 and 119 (previously discussed). The Feature 70 postmold measured four inches in diameter and nine inches deep. Although slightly smaller than Feature 59, its form is comparable.

The Connecting Trench literally connected the East-West and Craft House Trenches to determine if other post features were present between Features 59 and 70, forming a wall parallel to the one revealed in the 1994 and 1995 excavation blocks. Located in Test Pit 120 and adjoining the Feature 70 posthole, another posthole with postmold was found and designated Feature 94 (see Figure 9). Its postmold measured four inches in diameter and extended to a depth of eleven inches into the subsoil layer. Because Feature 70 and 94 are paired, it is thought that one or the other is a supplemental post, installed to support a failing structural member.

Feature 87, an irregularly shaped, six-inch deep pit, was discovered in alignment with posthole Features 70, 94, and 59. Although the function of the pit is unknown, it also contains a sherd of plain white salt-glazed stoneware and must be the product of 18th century activity.

A few feet south of Feature 87 another probable posthole was recorded in Test Pit 122. Designated Feature 89, the disturbance consisted of a twenty-six-inch long, fourteen-inch deep, flat-bottomed pit with a large vertical stone standing at its center. The angle and location of the stone suggest a cavity, such as a postmold, was present when the feature was closed. As depicted in Figure 9, the feature occupies a middle position in a distinct line formed by postholes in Features 70, 94, and 59. Although no truly diagnostic artifacts were recovered from the disturbance, the assemblage did include one sherd of an unusual low-fired, gray-bodied, green-glazed earthenware which is consistent with coarse earthenware types available in the late 17th and early 18th centuries. Without question, the line formed by post features 70, 94, 89, and 59 is parallel to the north/south structure's west post line discovered in 1995. Furthermore, a similar pattern of paired posts and post placement exists. The primary difference between post features found in the two lines is their size. For an unknown reason, posts in the east line are slightly smaller than those in the west line, except for Feature 59 which is comparable. A date for the structure is suggested by Features 58 and 70. Both pits would have been obscured by the structural wall formed by the east post line, yet each contained a ceramic type which was not produced until 1720. Therefore, the north/south structure must postdate 1720. This finding is consistent with evidence accumulated during the past several field seasons and although admittedly circumstantial, continues to support the working hypothesis that the north/south structure belongs to Ephrata Cloisters early communal period, ca. 1735-1750.

Finally, a most unusual discovery was made in Feature 88, located in Test Pits 121 and 125. Located east of the post line previously described, the pit was absolutely filled with an assortment of late 18th and early 19th century artifacts (see Figure 10). The assemblage included: 616 pieces of window glass; brick and mortar fragments; wrought iron nails; iron staples; lead window came (similar to glazing); plain/glazed red earthenware, creamware, and pearlware ceramic sherds; pieces of a hand-blown, etched tumbler; two straight pins; a spun-back brass button; an iron shoe buckle; two eyeglass lenses (one still in a metal frame); dietary animal bone; brass tubing; glass tubing; a stencil brush; carding roll fragments; fence wire; prehistoric chipping debris; a chalcedony side scraper; and a chalcedony spear tip!

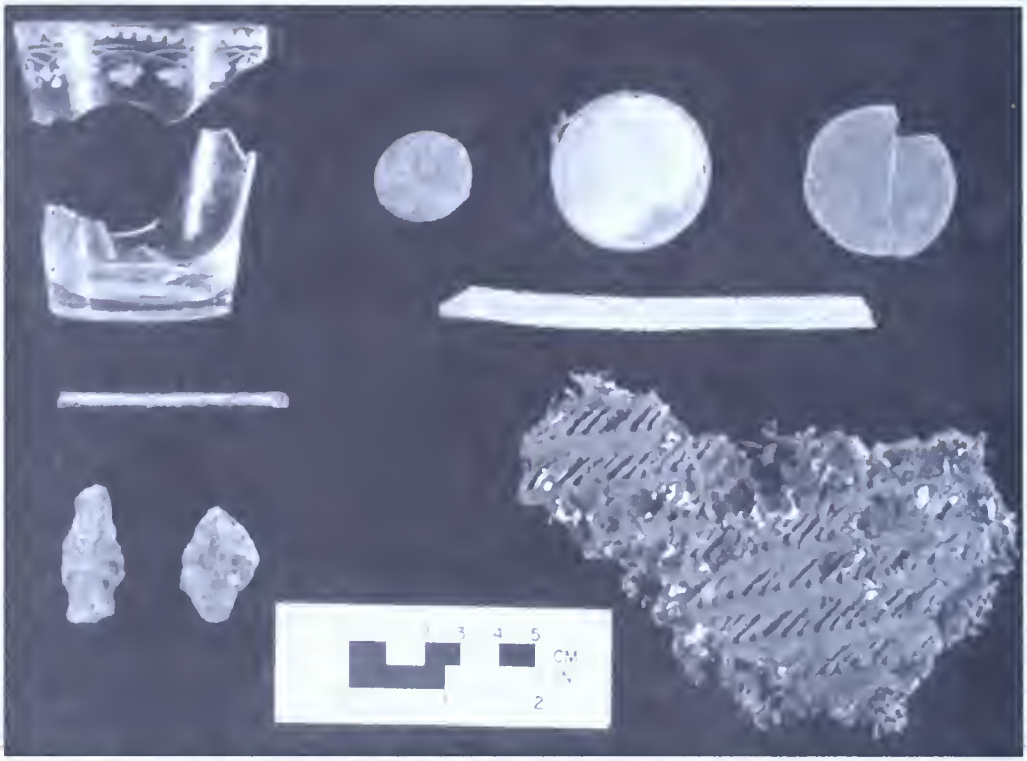

Figure 10. Select artifacts recovered from Feature 88 refuse pit. Top row–etched hand-blown tumbler; spun-back brass button; eyeglass lens with metal rim; eyeglass lens. Middle row–glass tubing; lead window came. Bottom row–chalcedony spear tip; chalcedony scraper; underside of oxidized carding cloth fragment (note pattern of wire teeth).

Several of the objects suggest a date after which these materials, obviously considered refuse, were discarded in the pit. The spun-back button is a type in common use during the period 1760-1785 (see Olsen 1963). Creamware ceramics were introduced to the American market in 1762; and, pearlware ceramics were first produced in 1790. Of special interest are the carding roll fragments, for they represent a woolen cloth-making industry at Ephrata Cloister in the late 18th century. Carding involved passing wool fibers across metal teeth embedded in leather to produce a softer, less compact yarn (Cooper 1971: 52-53).

Whether the artifacts were removed from the north/south structure before demolition or another nearby building (the Craft House?) during a remodeling episode is not known. The late 18th or early 19th century closing date for the deposit, however, is consistent with a date previously suggested for the north/south structure's demise (see Warfel 1996: 19) and transfer of site administration from celibate members to married householders who continued to worship on the property.

The East Excavation Block

The East Excavation Block was composed of Test Pits 82-96 (see Figure 2) and also characterized by a simple soil profile. Underlying a two- to four-inch sod layer, a six- to ten-inch-thick plow zone covered the investigation area. Eleven thousand and sixty-three artifacts (not including 3,706 pieces of coal, cinder, and slag) were recovered from the layer representing prehistoric and historic period site habitation through the 20th century. Along the west margin of the excavation block obvious soil disturbance resulting from the 1990 fire detection and suppression systems installation was noted. The utility trench exceeded the width of the proposed construction corri-

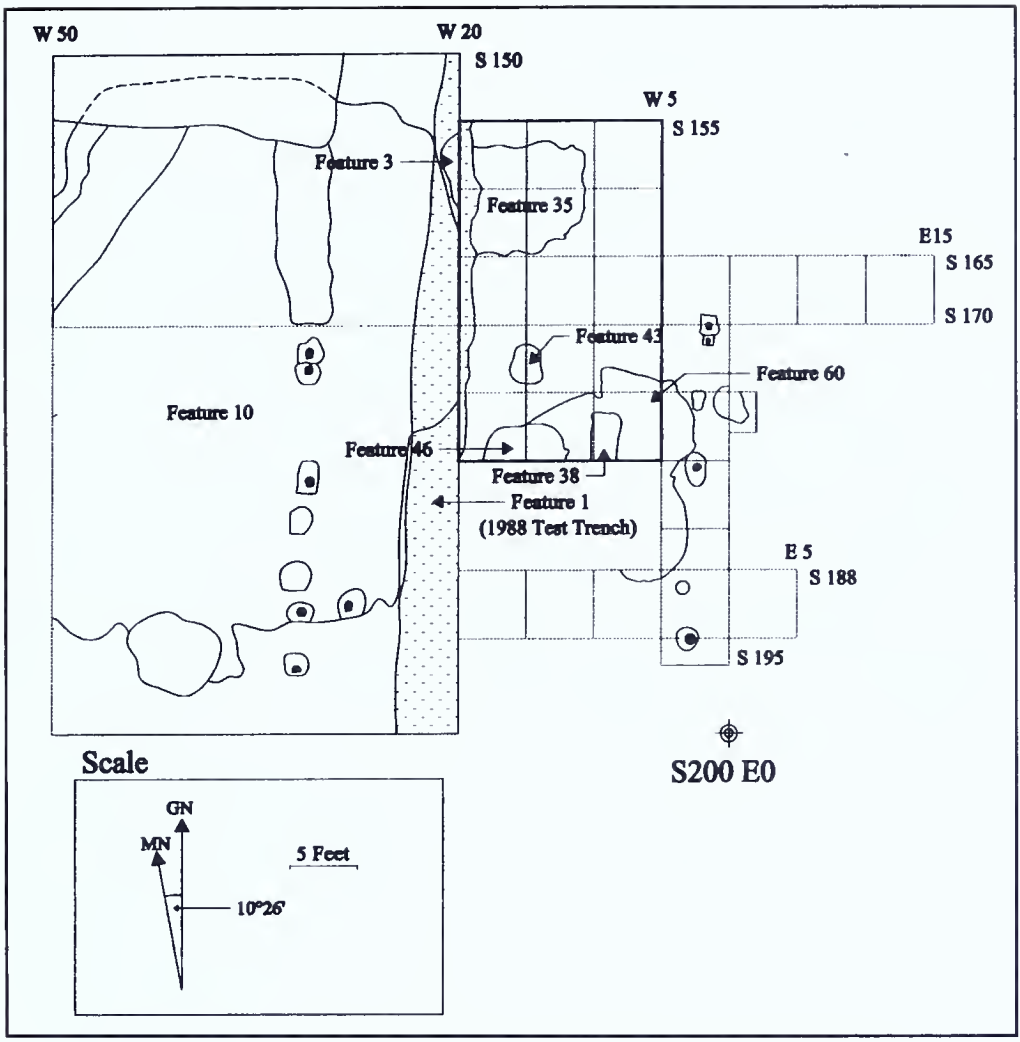

Figure 11. Plan of East Excavation Block (bold outline) with respect to 1994 and 1995 excavation blocks, the East-West Trench, the Connecting Trench, and the Craft House Trench.

dor tested in 1988; hence, an exact correlation between feature boundaries recorded in 1988 and ones plotted in 1996 could not be achieved.

Upon removal of the plow zone, Level 5 subsoil was apparent, as were numerous tell-tale soil stains indicative of past activities. Some proved to be natural disturbances caused by tree roots and rodents. Others, such as a series of small postmolds found in Test Pits 91, 92, 94, and 95, were the product of horticultural activities, when the East Excavation Block was cultivated as part of the Print Shop garden. Of particular interest were Features 35, 38, 43, 46, and 60. Feature 35, located in Test Pits 83, 84, 86, and 87 (see Figure 11), was a large, somewhat rectangular, basin-shaped pit with a flat bottom. A small portion of the disturbance was originally designated Feature 3 when discovered and investigated during 1988 testing (see Warfel 1990: 38-42). Combining 1988 and 1996 observations, the feature measured approximately 10' X 8'. The southern half of the deposit was excavated first in order to preserve and record a profile of soil layers present in the feature (see Figure 12). Three distinct layers of fill were removed. Level 1 consisted of a dark yellowish brown silt loam densely mixed with wood charcoal fragments, pieces of burnt clay, and fragments of burnt limestone. Due to

its depth, the layer was removed in three-inch increments, viz., 0"-3", 3"-6", 6"-9" Level 1, 0"-3" contained 560 artifacts, including: window glass; brick fragments; mortar; roofing slate pieces; wrought and cut iron nails; ceramic sherds—plain/glazed and decorated red earthenware, combed English slipware, plain creamware, plain and decorated pearlware, plain and "Scratch Blue" white salt-glazed stoneware; a stoneware tobacco pipe bowl fragment; dietary animal bone and shellfish; glass vessel pieces; a bone-handled pocket or clasp knife; and prehistoric chipping debris. Level 1, 3"-6" yielded 269 artifacts. The increment's assemblage consisted of: brick fragments; mortar; clay roofing tile; wrought and cut iron nails; a tack; ceramic sherds–plain/glazed and decorated red earthenware; English (?) stoneware; dietary animal bone; English flint flakes (likely associated with strike-a-lite maintenance); prehistoric chipping debris; and a prehistoric end scraper. Level 1, 6"-9" contained 397 objects, including: brick fragments; mortar; plaster; ceramic sherds plain/glazed and decorated red earthenware, English stoneware; a straight pin; dietary animal bone; and prehistoric chipping debris. The slip-decorated red earthenware sherds found in this increment mended to form the German script plate illustrated in Figure 13. Although a complete translation has not yet been accomplished and may not be possible due to missing pieces, the words *liebe* and *uben* literally mean love and patience or discipline. If we consider the theological and spiritual goals of the Cloister commune, both are most appropriate!

Numerous ceramic sherds collected from the three Level 1 increments mend, demonstrating that the layer was composed of materials from the same source and deposited over a relatively short period of time. The pocket or clasp knife found in Level 1 (Figure 14) is a style in common use during the period 1758-1781 [cf., Hanson and Hsu 1975: 145 (Figure

Figure 12. Excavation of Feature 35 root cellar: southern half completely removed (facing North).

Figure 13. Slip-decorated red earthenware dish with German script recovered from Feature 35.

74, a.) Likewise, the presence of creamware and "Scratch Blue" white salt-glazed ceramic types suggest artifacts in the layer were in use during the third and fourth quarters of the 18th century. Pearlware ceramic sherds in the assemblage, however, provide the date after which the deposit was closed–1790. Near the margins of the feature distinct "basket loads" of clay soil overlaid Level 1, 6"-9" fill. These clay deposits contained mostly structural debris, such as brick fragments, mortar, and wrought iron nails, and further illustrate the intentional nature of refuse disposal into the pre-existing basin-shaped pit. Level 2 of Feature 35 was only present in the western portion of the deposit. It consisted of a yellowish brown sandy loam. (This layer was also documented in the west portion of the deposit investigated in 1988.) The partial layer contained only seven artifacts, including: mortar, plain/glazed earthenware, prehistoric chipping debris, and an Archaic Period argillite spear tip. Since none of the artifacts recovered from Level 2 mended with those found in Level 1, Level 2 is clearly defined as a distinct refuse layer.

The large quantities of wood charcoal, burnt clay, and burnt limestone pieces found in Feature 35 fill layers indicate the deposit consists of hearth sweepings, probably collected from a fireplace in a nearby structure. The shape of the pit and its location midpoint between the east and west post-built walls of the north/south structure suggest Feature 35 may have functioned as a root cellar under the floor of the structure. If so, after the building was razed, the pit was available to receive refuse. Or, alternately, the feature may have been filled with debris produced by demolition after salvageable materials were removed from the site. Whatever the case, the late 18th or early 19th century closing date for the deposit is consistent with evidence collected from postholes marking the structure's east and west

walls. Features 38 and 43, located in Test Pits 94 and 92-93 respectively (see Figure 11), contained diagnostic 18th century ceramic types (e.g., plain white salt-glazed stoneware, dry-bodied red stoneware, combed English slipware, blue-on-white tin-glazed earthenware, and Whieldon ware) as well as dietary animal bone, brick fragments, wrought iron nails, and plaster. Like the Feature 35 root cellar and the north/south structure's postholes, Feature 38 also contained a plain pearlware ceramic sherd, indicating the deposit was not closed until sometime after 1790. Because both pits are located between the structure's outside walls, they must have been intentionally dug beneath and accessed through its floor. Although the features' secondary function as trash receptacles is certain, their original purpose remains unknown.

Feature 46, located in Test Pits 95 and 96, was a 6' X 3' bowl-shaped depression. Its fill was uniquely layered, with light- and dark-colored soil lenses. Although it contained very few artifacts, its shape and mottled soil layers strongly suggest it is an abandoned privy pit. The recovery of eleven pieces of coal and cinder– artifacts which do not appear on the site until the 19th century– indicate the deposit is <u>not</u> contemporaneous with the north/south structure which occupied and covered this location throughout much of the 18th century.

Finally, a very large and irregularly-shaped disturbance, Feature 60, was discovered in the southern portion of the East Excavation Block, the west margin of the Connecting Trench, and along the north edge of the East-West Trench (see Figure 11). The feature was nearly missed because its fill contained so much sterile clay subsoil, some of which was orange in color and derived from sources deep in the site's soil profile. Wood charcoal smears and fragments, however, persisted as the area was repeatedly troweled. In fact, charcoal pieces made up nearly 73% of the artifacts recovered from the deposit. Five percent of the assemblage consisted of prehistoric chipping debris; whereas, the remainder of the collection included historic period artifacts, such as brick fragments, iron nails, plain/glazed and decorated red earthenware ceramics, and unidentified (badly corroded) metal pieces. Significantly, because Feature 38, a mid 18th century deposit, was cut into Feature 60, the large disturbance must date at least to the early 18th century. Its irregular outline, sprawling form, distinctive fill derived from deep underlying clay sources, and plentiful wood charcoal all suggest the feature is the site of a tree-fall. The prehistoric and historic period artifacts mixed in the soil were probably on the ground in the vicinity of the tree and "turned-under" when it was up-rooted. It is not known if the tree fell due to natural reasons or was intentionally cut by early Cloister commune members clearing land for construction or horticulture. Likewise, it is not clear if wood charcoal pieces resulted from burning after a lightning strike or purposely-set fires to reduce root and trunk mass.

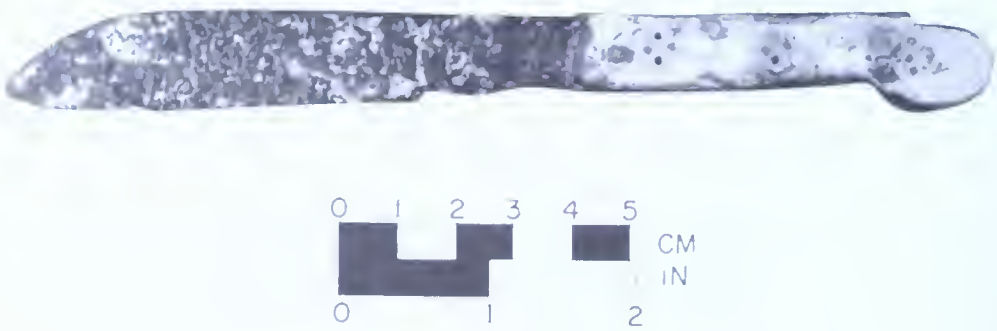

Figure 14. Bone-handled clasp knife recovered from Feature 35.

Figure 15. Location of Test Pit 124 east of Solitary Cabin retaining wall (facing West).

Future investigations are required north and south of the East Excavation Block to determine if other interior features exist between the north/south structures east and west walls. Such finds may improve our understanding of the buildings architectural design as well as the role it played in the Cloister commune.

Solitary Cabin Retaining Wall

During the course of the 1996 field season, Ephrata Cloister site maintenance personnel indicated that the retaining wall located east of the Solitary Cabin had failed and required repair (see Figures 1 and 15). A decision was made to excavate one archaeological test pit at the base of the crumbled section to determine why the

wall failed and record evidence of significant historic period deposits if present. Test Pit 124 measured 3'9" X 3'. Immediately under a thin sod layer, Feature 84 appeared. The feature paralleled the face of the wall (see Figure 16) and was marked by mottled brown and dark yellowish brown clay and loam. The feature is the builder's trench for the failed wall.

Investigation of Feature 84 revealed that the collapsed wall section rested upon a 2 1/2' deep poured concrete footing. When constructed, however, the mortar-laid limestone wall was not pinned or anchored to the footing. Hence, the wall was unable to withstand soil pressure exerted by the bank it was designed to retain. Interestingly, the modern wall was not the first wall at this location, for evidence of an earlier rubble stone wall was visible in the builder's trench. Further investigations are required to determine the age and function of the earlier wall. Was it simply built to retain soil like its modern counterpart? Or, is the masonry remnant that of a structure? Careful excavation of test pit soils east of the wall produced a few 19th century ceramic sherds and subsurface stains associated with gardening an activity depicted in early 20th century photographs of the Solitary Cabin.

Prehistoric Artifacts

Similar to previous excavation seasons, a variety of prehistoric artifacts (n=340) were recovered from the plow zone and historic period feature fill layers (see Figure 17). They represent a broad range of activities, such as stone tool manufacture and maintenance, food processing and preparation, hunting, and hide pro-

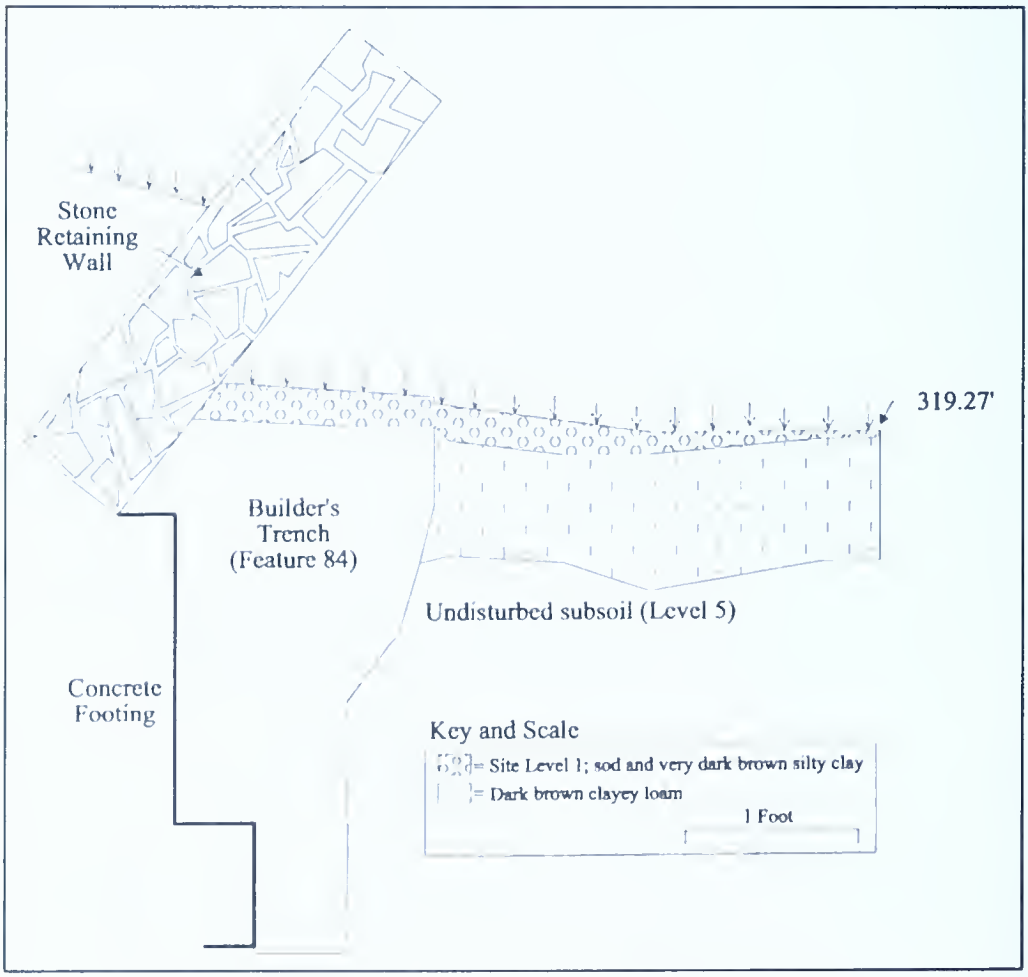

Figure 16. North profile of Test Pit 124 at S200 grid line.

cessing. Furthermore, some of the artifact styles indicate Native American hunters and gatherers inhabited the Cloister property as early as 3500 B.C.

For the first time two quartz triangular arrow tips, depicted in Figure 17, were recovered. Hallmarks of the so-called Late Woodland Period (ca. 1000 A.D.-1500 A.D., a time when native peoples lived in semi-permanent hamlets and villages and subsisted on garden products as well as food sources retrieved by foraging, hunting, and fishing) these late prehistoric artifacts significantly expand the range of time for which the property is known to have been used by native peoples.

Figure 17. Typical Archaic and Woodland Period artifacts recovered during 1996 field season. (Note two white quartz triangular arrow points in top row and hammerstone cobble on right side.)

Conclusions

The 1996 field season was most successful in recovering structural information–the specific objective of this problem-oriented investigation. The footprints of two large structures which once stood in the project area have been further exposed and documented. Newly found evidence suggests the diagonal structure, marked by a broad but shallow limestone footing, has interior room footings. Although the full dimensions of the structure cannot yet be estimated, the length of the diagonal structure's east wall is calculated to be at least 43'. And, curiously, the discovery of several postholes and a pit-like depression, under the soil layer upon which the footing rests, indicates an even earlier structure may have once stood at this location.

In the East Excavation Block the present project located postholes forming the north/south structure's east wall; consequently, the width of the building is now known to be 29'-30'. The discovery of additional postholes on the west post line verifies that the building's length is greater than 53'. Moreover, datable ceramic artifacts found in posthole and interior feature fills consistently demonstrate that the structure stood until at least the last decade of the 18th century.

Even though the purpose of the diagonal and north/south structures is not absolutely certain, comparison of their estimated dimensions with other Ephrata communal buildings strongly indicates they may have served similar functions. The extant Sisters House or Saron measures 30' X 71'. Ruins of the Brother's House or Bethania, which stood in the meadow east of the Print Shop until 1908, measure 36' X 74'. The 29'-30' width and 53'+ length of the north/south structure compare favorably with recorded dimensions of these two dormitory buildings. Consequently, the structure is provisionally interpreted to be an early communal dormitory. Its location in the center of the historic Ephrata commune and post-in-ground construction–an expedient method of assembling structures in a forested environment–further suggests the north/south structure may be Kedar, built in 1735 as the first communal dormitory. Although Kedar is described in early documents to be at least a two-story-tall building (see Lamech and Agrippa 1786: 76), neither its dimensions nor location within the community are given.

The dimensions of the extant church or Saal, attached to the Saron, are 41' X 38'; whereas, the ruins of the church built to serve the Bethania measure 40' X 30'. The 43' length of the diagonal structures east footing compares favorably with these dimensions. Could the diagonal structure be the Bethaus (Prayer House), the 1736 church that served the Kedar? If so, why is it situated at a 29°-30° angle to the north/south structure rather than the 90° angle which distinguishes the spatial relationship between the Saron and the Saal, as well as the Bethania and its church? Why was it built on a stone footing rather wooden posts? Is the stone footing a direct artifact of the importance assigned to the structure? In a religious community it is quite logical that more time and energy would be invested in a sacred rather than a secular place, hence the difference in construction techniques characterizing the diagonal and north/south structures. Again, documents inform us about the Bethaus' appearance (see Lamech and Agrippa 1786: 79-80), but no dimensions or reference of orientation to Kedar are provided.

If the diagonal and north/south structures can be proven to be the Kedar and Bethaus, their discovery is tremendously important to understanding the use of space in the early commune and how the village evolved over time. Similarities and differences recorded between the layout and position of buildings in the first communal complex with those that succeeded it will permit us to analyze and begin to understand how the material world constructed by community members reflects changing Cloister ideology. Indeed,

through the discovery of these structures, we have the opportunity to recover the ideas and thoughts of people who occupied this place so long ago!

Finally, the full outline of the Feature 10 clay borrow pit has been documented, extending little more than a foot into the West Excavation Block. When first encountered by testing in 1988, who would have guessed how rich a refuse deposit the borrow pit was or that two early structures were built over it? The contents of the borrow pit have yielded many artifacts which reflect the food preparation, dietary, and social behavior of the early commune (see Warfel 1995, 1996).

The 1996 field season, like the others before it, answered many questions raised by previous discoveries and yet prompts many new ones. Planned excavations during the summer of 1997 will systematically address these new questions using a similar problem-oriented approach. Test pits will be dug at defined locations to acquire additional structural evidence and artifacts reflecting the Cloister's earliest days. Because there are no known records positively identifying the structures under investigation, complete archaeological investigation offers the only promise for full documentation and interpretation of these important pieces of Ephrata Cloisters history.

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